

collage

A random collection of facts, opinions and miscellany published from time to time by the editor of MOTOROLA'S ENGINEERING BULLETIN. Volume 2, No. 3 . . . Nov. 1966.



A CHANCE TO BE HEARD !



Whether or not this comes out before December is immaterial, this is our November issue, and as such, is going to be our election issue. So here is your chance to vote on some of the burning issues of the day, and we'll run the results the next time, if there is one.

- | | Yes | No |
|--|--------------------------|--------------------------|
| 1. If laymen don't organize, engineers and scientists will be running everything within 10 years (if they don't already) | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. The way things look now, Tab Hunter will be our next President .. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. The nineteenth amendment should be repealed (women voting) | <input type="checkbox"/> | <input type="checkbox"/> |
| 3a. It should be changed so that only people with college degrees can vote | <input type="checkbox"/> | <input type="checkbox"/> |
| 3b. It should be changed so that only those without college degrees can vote | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Integrated circuitry is o.k., but tubes were better because you could grab hold of them | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Contracts should be awarded solely on the basis of who needs the business the most | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Any technical proposal that exceeds 20 triple-spaced pages should be disqualified | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Time Magazine is the source of all knowledge | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. If Barry Goldwater had won, things would be different | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. There is a natural non-extraterrestrial explanation for all UFO sightings .. | <input type="checkbox"/> | <input type="checkbox"/> |



Your next *Engineering Bulletin* due around the first of the year, will contain among other great works of our time, these stimulating and provocative features:



HELMET RADIOS FOR THE TROOPS . . . In which we offer a scintillating state-of-the-art-and-beyond story of our personal radio gear . . . such as the helmet radio used by infantrymen. Direct descendant of our famous WWII Walkie-Talkie, these Pepsi-Generation devices use integrated circuits, and because of that we'll toss in a few bouquets to our sister Semiconductor Products Division. Tom Quaid of our Chicago Center is penning the piece.



GUNN-EFFECT DEVICES . . . Nick Sakiotis, our physicist extraordinary, will continue his story of the "Bulk-Effect", concentrating this time on the Gunn Oscillator and similar forward-area microwave phenomena. The Gunn Oscillator, as you all know, shows early promise of becoming the solid state microwave transmitter we've all been looking for — smaller, lighter and many times more economical than the customary magnetron; no magnets, for example. Production, as Nick will tell you, could begin as early as 1968. Maybe sooner, but we make no wild promises around here.



AND, NEVER TO BE OVERLOOKED . . . Dr. Dan Noble, the most iconoclastic Vice-Chairman and Executive Vice President we've ever known, will continue his long-running attack against the status quo. (In response to many correspondents, Dr. Noble does not write *Collage*. But, there's a column waiting for him if he so chooses.) Also, the "Volley" will again bring you up to date on recent happenings at Motorola's Government Electronics Division.

DEPT. OF GOVERNMENT OVERSIGHT



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DEPT. of CONTROVERSY

or, the editor takes another wobbly stand

Now that the current UFO-sighting season seems to have passed its peak, the pros and cons published, and John Fuller and Phil Klass have had their say, your myopic old editor feels that it is high time for *Collage* to pass judgement on these phenomena. That's because we've noted that the only real UFO experts are people who, like us, haven't seen any.



This, you must admit, is a bit ironic. I mean, in a court of law, what is considered the most valid type of evidence? Eyewitness, of course. And what is considered the least valid? Circumstantial. But in the case of UFO's we have hundreds of eye-witnesses, only the "experts" are trying to put them down using circumstantial evidence.

Let's imagine we're in a court of law now. Your skeptical old editor is an "expert", and is questioning an eye-witness.

Editor: So you claim you were driving down Route 205 and saw this glowing, football-shaped object land in a marsh, set a while, and then fly away at super-supersonic speeds?

Eye-witness: Yes. Not just me but my wife and three children.

Editor: (moving in for the kill with biting wit and sarcasm) And did you see little green men get out and plant a Venutian flag?

Eye-witness: Well, no, we couldn't tell if the vehicle was manned or not, if indeed "manned" is the correct term.

Editor: (taken aback by such a rational answer from such an obvious nut) Have you ever heard of phenomena called "marsh gas" or ball-lightening"?

Eye-witness: Why yes. In fact, I did my doctoral dissertation on what you call "ball lightening". Actually, this is a fairly common occurrence. The proper name for it is . . .

Editor: Enough! How heavily had you been drinking that night?

Eye-witness: Well, I'm ashamed to say, not at all. You see, we were on our way back from my youngest son's Indian Guide meeting.

Editor: (aside to the court) Hmm, I'd like to know what they were smoking in their peace-pipe. (addressing the witness) And you five, among all those on the highway, were the only ones who saw these "flying saucers"?

Eye-witness: Well, not exactly. 6 Highway Patrol officers, 3 Air Force officers and about 25 passing motorists all stopped along with us to observe. In fact, we all discussed it for a time before the newsmen showed up.

Editor: Hah! Getting your stories straight, eh?

Eye-witness: Actually, no. Most of our estimates as to size and color varied quite a bit. I counted eight lights around the hull and one of the Air Force officers swore he saw 10. The velocity and angle of ascent are yet in some doubt, and . . .

Editor: O.K. O.K. (moving in again for the kill) Now, have you been contacted by any national magazine in regard to selling your account of this so-called sighting?

Eye-witness: Well, yes.

Editor: Aha! And how much did they offer you for your purported story?

Eye-witness: Well, the offer was rather high, but I turned it down because it seemed in rather poor taste to accept money to retell something that is already in the public record. Also, a gentleman from a government agency I'd rather not mention suggested that it would be in the best interest of . . .

Editor: Alright! Enough of this drivel! (turning to judge, using most judicious face) The witness may step down; no further questions. In summation, your honor, I have conclusive evidence that during the period in question there were no weather balloons, helicopters or other aircraft in the area. Obviously, since there is no rational explanation to these hysterical sightings, the witness is either irrational or a glory-seeking fraud.

Judge: Case dismissed. Thank you Mr. COLLAGE Editor, for dispelling another of these fantastic rumors. The witness will be confined to the state mental hospital for observation. Next case.

Well, the point of all this foolishness is that if everyone refuted the eye-witness accounts of reasonably logical people would we have accepted the reports of people like Aristotle, Gallileo, Copernicus, Newton, Maxwell, Admiral Peary, Timothy Leary and others like that? Hell, no! They'd all be a bunch of frauds.

So, our editorial for today is: We know everything about everything. Anyone who claims to know something about something we don't know something about is a crackpot. If we lose our keys in the living room where the lights are out, and the light is on the kitchen, we shall look for the keys in the kitchen.



Forest D'Leigh, m. s.

As you may recall, Forest was lured into the apartment of his boss' secretary, Fleur. At last report he is still there, and he won't come out again and grace these pages with more of his stirring adventures unless the demand is screechingly overwhelming. He feels very unloved, except of course, by Mom and Fleur.

Rumor of the Month

Mitsubishi will actually get the SST contract. Or maybe Messerschmidt. According to our reliable sources, this will be done so that Lockheed and Boeing can relax and live in peace with each other forever after. Also, it will allow California and Washington to stop trying to decide what to do with all that money.



Retorts we wish we'd thought of

Someone once asked George Bernard Shaw if he knew that the words "sumac" and "sugar" were the only words in the English language in which the letters "su" were pronounced as "shu". To which GBS replied, "sure."



THE ENGINEER ON THE LEFT IS TO THE RIGHT OF THE ENGINEER IN THE MIDDLE WHO IS LEFT OF THE ENGINEER ON THE RIGHT.

So you think you know all about the political thinking of engineers, do you? Hah! Think anyone with a colliche degree is a screaming pinko, do you? Hah!

Audacious Allen Snyder, ad and P. R. guy of our Semiconductor Products Division, scored the hit of WESCON by conducting a straw poll of attending engineers. But he didn't just ask them their favorite movie stars and other such pap, he asked them to vote on real issues. And vote they did, more than 5500 of them.

Of course there was something in it for Motorola. The votes were counted on Cubic Corporation's Votronics Vote Counter that contains about 85 pounds of Motorola integrated circuits, and Snyder made no effort at all to keep this a secret.

Anyway, here are some of the results:

87.6% approve of bombing around Hanoi. 65.7% do not approve of a national firearms control bill. 71.5% wanted Reagan to beat Brown for governor of California. 15.2% would re-elect LBJ if an election were held tomorrow; 17.4% would vote for Bob Kennedy; 32.6% for Romney; and 34.8% for Nixon.

10% attended WESCON to visit the technical sessions; 12.8% as exhibitors, 77% to see the exhibits. Whether or not this is a typical sampling of engineers is problematical because just about 90 percent of the delegates were California residents. Since some of our best friends are from California*, COLLAGE will not editorialize on the uniquely inconsistent voting habits of Californians. So let's let it go at that.

*But we're not sure if we'd want our daughter to marry one.

son of a midsummer madness



or, trivia revisited

The responses to last time's trivia test were, for the most part, a lot better than the questions, most of which weren't for real. Some of them, though, sort of had actual answers, and here they are:

Elijah (or is it Elisha?) Cook, Jr., is an actor that you've probably seen a thousand times. He's usually a psychopathic bellhop or something like that. He generally dies like a rat in quicksand because no one will throw him a rope.

Hoacin Khalfi was (and may yet be) a North African lightweight boxer who was on the tube a lot during the never-to-be-forgotten Wednesday or Saturday night fights. It is not known if he fought Ralph "Tiger" Jones.

Curt Jurgens played W. V. Braun. Pierre Salinger is still around. Bob Muncrief was a good right-handed pitcher for the St. Louis Browns in the 40's. Here are some of the responses. Unfortunately, there isn't room for all of them, and there were some dandies.

W. W. Moyer: "Hoacin Khalfi was the famous Serbo-Croatian physicist who discovered certain types of faults in crystal lattice structures now known as Khalfi breaks."

R. W. Cobb: "Heisenberg invented the electron and even he doesn't know exactly where it is most of the time, so why ask me?"

H. Reinish: "The electron was invented by Irving Electron just like Hertz Rentacar invented Hertzacycles."

K. Wright: "I invented the electron and it had better be in the closet with my collection of protons or somebody's in trouble."

S. Topolsky and W. Endsdorf: "Isaac Neutron invented the electron. Hoacin Khalfi is the Burgermeister of Haifa, Israel, mainly because there was little need for one in DeSoto City, Kansas."

P.S. Editor's note to Bob Eldridge: "You're right, Goya didn't paint the Mona Lisa. Actually, it was Philidor. He had just won the first world's chess championship and he taught his patented 'Go ahead, you may take that pawn of mine if you wish' smile to his mistress so that it could be preserved for posterity."



DEPT. OF UNUSED PIASTERS

In case you haven't read our ads (and with our budget this is a distinct possibility) we'd like to brag a little on our sidelooking airborne radar, known affectionately to one and all as SLAR, or to be more formal, AN/APS-94. This is the system installed in the Army's Grumman OA-1B Mohawk aircraft, and doing right well in some of the South-east Asia hotspots. The system, with a moving target indication capability, can record and transmit radar imagery data in real time to ground stations. Value of the Mohawk to our Vietnam operations is indicated by the fact that the Viet Cong have a standing offer of 50,000 piasters (118 = \$1) to anyone bringing down a Mohawk. Luckily, few payments have been made.

If your interests encompass surveillance radar, radar data transfer and such like, write for more details.



HAPPINESS IS A CM-610

It's about that time of year when you should be thinking about a gift for mother or your chief engineer. We'd like to suggest a Motorola CM-610 Communications Receiver. After all, anything that is "a double-conversion, single channel, crystal controlled, superheterodyne receiver capable of a-m reception in the band from 100 to 180 megacycles" can't be all bad. And it is very nice for ground-to-air communications. Incidentally, if you are diffident about VHF communications try our UHF model, the CM-620. In every other respect it is identical to the 610, and both the -610 and the -620 are available for immediate delivery. You can send your cash, check or purchase order to our Chicago Center, but if you're a wee bit skeptical, we'll be happy to send you specs and data sheets first.

ERR NOT, BUT IF YOU DO

Since not even good old American Know-How can make absolutely error-free data transmission equipment, Motorola, friend of the harried prime contractors in this field, has developed a new Error Correction System. It's an I/E Coder-Decoder, used for error control in digital data links. And a perceptive little devil it is. It can detect and/or correct errors at data rates up to 50,000 bits per second. With additional buffering it can handle transmission rates of 1,000,000 bits per second. The input and output data are full baud binary signals which are compatible with most existing modem and data transmission equipment. The equipment has a correction capability of up to four randomly dispersed errors and a detection capability of (1) Up to four randomly dispersed errors, (2) All burst errors of length $B=8$, and (3) 99.22% of a 9 bit burst. So relax, manufacturers of data transmission hardware, Motorola will, in our self-effacing way, make you look as good as your specs say.

DEPT. OF ENLIGHTENMENT

IMAGEWISE . . . Consider yourself among the chosen few. Since you are reading COLLAGE, you probably have guessed that Motorola makes other things than car radios and TV sets. But, alas, the world at large is not quite so fortunate. To help rectify this horrifying situation, our Corporate Public Relations Department has put out a nice little brochure (shaped like COLLAGE, no less) that tells what the corporation is all about and all the nice things it makes. For this sort of thing it is surprisingly unpretentious and soft-spoken, and you could probably do a whole lot worse than send for a copy to study before you start your own industrial giant. Write to COLLAGE for it, and we'll pass your request along to our corporate wheels. If nothing else, it should prove to them that a few people actually read COLLAGE.

No one spends more on cost reduction than us!

Motorola Government Electronics Division has had a Cost Reduction Manager on the payroll since 1961. Whether or not we have saved as much in those five years as we've paid this guy and his staff has not been publicly announced, but he must be doing all right by us because we were able to afford putting out an eight-page, two-color brochure entitled "Motorola Cost Reduction Program." The brochure, basically, tells how we find all kinds of sneaky and devious ways to keep prices down, making it possible to complete fixed-price jobs for almost the quoted amounts, with maybe enough left over to print nice things like Cost Reduction brochures.

To those of you who are seriously concerned, it is noted that we never cut costs at the possible sacrifice of quality or reliability.

If you'd like your very own copy of this soul-stirring brochure, write.

photosynthesis we can't explain..

this, we can

To the numberless hordes of you out there in radioland who somehow prefer your frequencies to be synthesized, Motorola has come up with just the thing. Our V. P. in charge of pretentious names for products must have been on vacation, because the new Motorola frequency synthesizer is called, strangely enough, the Motorola Frequency Synthesizer. Not only that, it's got lots of digital microelectronic circuits, with all the ancillary benefits inherent in that. This Frequency Synthesizer is said to uniquely fulfill a primary requirement of most military radio sets — the ability to quickly and reliably select one of a number of available channels. It uses a single crystal and an indirect method of frequency synthesis. We could easily tell you a lot more about this nice gadget, or "breakthrough" if you prefer a little drama, but then you wouldn't have anything to write for. So write.



a system is
a system is
a system is
a component

At what point does a component become a module, a module become a subsystem, a subsystem become a system, and a system become a component? I mean, if you were in the business of making, say, A-D converters, all packaged nicely and ready to go, you would probably call them your "high-speed, solid-state with a bunch of I/C modules, high signal-to-noise, low power drain, analog-to-digital conversion systems." And then you sell one to some joker who shoves it into a row of racks roughly the length of the Pennsylvania Turnpike. To him, your system isn't even a subsystem or a module. It's a component, and it better damned well know its place.



and yet another tear for the poor working girl...

Here are a few more unintended typos made by secretaries who have the miserable job of trying to translate engineers' handwriting or mumblings into reasonably legible typing.

As Typed	As Intended
Calculations by sly drool...	Calculations by slide rule
Without detailed in- formation, we're only hooting in the dark...	... shooting...
for submittal to ECOM as funning and final	... as running...

These were submitted by T. L. Gershun, A. Slatin and someone anonymous. Our thanks to R. Noyes of Cedar Rapids. He sent a classic, which, unfortunately may violate the mail laws. Also, many of you called us on what you thought was a typo in our last Forest D'Leigh episode. Fleur really was "smiling," and if you don't know what that means, you've had a very sheltered life. Send more. Or at least make some up. We'll never know the difference.

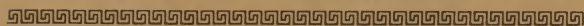


pun of the month

Your ever-on-the-lookout old COLLAGE editor read of a homeowner's meeting in which they were protesting what they believed to be an inequitable property tax increase. However, the meeting became so noisy and disorganized it had to be broken up by the cops. Would you call that big, noisy rhubarb a din of inequity?



PUZZLE OF THE MONTH



As usual, we received lots of answers to last time's puzzle of reconstructing the long division problem, where the only digit given was an 8 in the quotient. There were too many right answers to list all the winners, but some special commendation should go to David Nee at Stanford Research Institute, who claims he did it in no more than two minutes. Those who did report how long it took them expressed a range of between Nee's two minutes and someone else's three hours. Average time seemed to be about 10 or 15 minutes.

The correct solution, which we've printed below, was generally arrived at by noting that, when two digits are brought down from the dividend instead of one, there must be a zero in the quotient. Since this occurred twice in our problem, you know immediately that the quotient is $x080x$. You can also see that when the divisor is multiplied by the last digit in the quotient, the result is a four-digit number. Since multiplying the divisor by 8 results in a three-digit number, the last digit must then be 9. From there on it's pretty simple.

Correct Solution

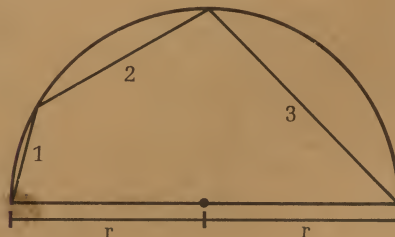
	80809
124	10020316
	992
	1003
	992
	1116
	1116



So, here a different kind of problem, submitted by Don Mark of our Aerospace Center in Scottsdale:

A semicircle has three lines inscribed end-to-end, as shown.

The lengths of these lines have the ratio 1:2:3. Express the radius in terms of the lengths of lines.



Good luck.

Department of Poverty

or, how to make a buck without spending too many



As usual the Motorola Government Electronics Division's advertising budget will be a piddling pittance. However, we would like you to see our few grubby advertisements. The problem is, and has ever been, trying to decide what magazines to place them in. Hence we would be delighted if you would fill out the attached questionnaire and return it to us. If our paste-up department is on the ball, the facing page should be a tear-out, postage-paid return card. So, simply mark the appropriate boxes, fill in whatever other data we ask for, tear out the page and drop it in the mail.

We'll thank you in advance for your time and effort. You may well make a vast contribution to the rather inexact science of advertising research. You may be also sure our advertising types will mull your responses with great seriousness, and will base a good deal of their 1967 program on what you report here. So for once, please take us seriously.



I am ☐ am not ☐ sometimes involved in the decisions to recommend suppliers for Surface or Space Communications, Radar, Radar Transponders, Command Receivers, Microwave systems, Telemetry and Digital Command Systems, Tracking and Guidance Systems, Fuzing and Target Detection Devices, High-speed Teleprinters, Automatic Test & Checkout Equipment, and other things in that general line of defense and aerospace electronics.

I read the following magazines on a fairly regular basis:

ELECTRONIC

- ☐ DATAMATION
- ☐ EE
- ☐ EDN
- ☐ ELECTRONIC DESIGN
- ☐ ELECTRONIC NEWS

- ☐ ELECTRONICS
- ☐ ELECTRO-TECHNOLOGY
- ☐ IEEE SPECTRUM
- ☐ MICROWAVE JOURNAL
- ☐ PROCEEDINGS OF IEEE

BUSINESS

- ☐ BUSINESS WEEK
- ☐ FORBES
- ☐ FORTUNE
- ☐ NEWS FRONT

- ☐ NEWSWEEK
- ☐ TIME
- ☐ U. S. NEWS & W. R.
- ☐ WALL ST. JOURNAL

AEROSPACE

- ☐ ASTRONAUTICS & AERONAUTICS
- ☐ AVIATION WEEK

- ☐ SPACE AERONAUTICS
- ☐ TECHNOLOGY WEEK (M&R)

MILITARY

- ☐ AIR FORCE
- ☐ ARMED FORCES MGMT.
- ☐ ARMY

- ☐ ORDNANCE
- ☐ SIGNAL
- ☐ USNIP

SCIENTIFIC

- ☐ INDUSTRIAL RESEARCH
- ☐ INT'L. SCIENCE & TECHNOLOGY

- ☐ RESEARCH & DEVELOPMENT
- ☐ SCIENTIFIC AMERICAN

OTHERS

Now, please go back and circle your three favorites . . . the three you read most and/or like the most . . . those in which you would be most likely to see a Motorola ad.

And, if you're not bored already, you might help us even more by completing the following:

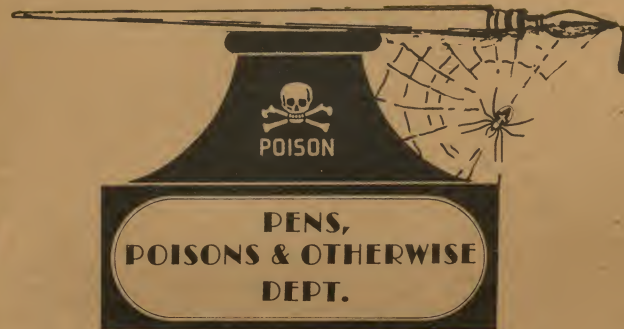
1. I am a scientist ☐ engineer ☐ in this field: _____.
2. I am considered "management": yes ☐ no ☐.
3. I am employed in government ☐ industry ☐ other ☐.

Kind or branch _____

4. I am non-technically oriented but a fine person nonetheless ☐.



FIRST CLASS
Permit No. 74
Scottsdale, Arizona



More graffiti from your editor's sagging mail bag.

DARN

D. R. Cool — "You're so darn smart, you tell me why a mirror reverses right and left but not up and down." (If I told you you wouldn't believe me — Ed.)

ALL I EVER DO

F. G. Cook — "Mr. Cook, Jr., is not my relative. It's just that going to the movies is all I ever do." (Would someone in New Haven please invite Mr. Cook to a clambake, or whatever else you do in New Haven — Ed.)

NEW SEWERS

Big Frank — "Hoacin Khalfi is a dead-end street in Scottsdale, Arizona. It is unique in that no one was assessed for new sewers . . ."

THE GREATEST

L. S. Goodman (Mrs.) — "Collage is, unequivocally, the cleverest publication I have ever seen. I'm a clipper of unique and 'daringly different' ad material, articles, etc. Yours is the greatest." (Why don't you leave that husband and run off with me? Love — Ed.)

THE KARO-KANN

B. Eldridge — "And don't forget that Rodolfo Cardoso used the Karo-Kann at Portoz in 1958 against your own Robert J. Fischer and held out for 62 moves with it . . ." (If there's anything worse than a bridge snob, it's a chess snob — Ed.)

WORDY

C. T. Morrow — ". . . they are so wordy, cumbersome, and unimaginative . . ." (Talk to Mrs. Goodman, C. T. — Ed.)

OK! OK!

Sally Powell — “. . . demand you put my name on Collage mailing list . . . at once!”

SARCASM

J. G. Peppers — “Your sarcasm certainly seems to reflect the thinking of many people, unfortunately.” (*Bah!*)

FIND OUT

G. Wussow — “I’ve been working on LEM, Apollo and Saturn transponders for 3 years and I’d like to find out what I’m doing.” (*Let well enough alone, G. Maybe you’re actually an astronaut and don’t know it — Ed.*)

YOUR LIVER

L. Torick — “When using a lavalier (microphone) extend the neck chain to the greatest and don’t use the necktie clip so the mike points in the general direction of your liver.” (*So what does your liver have to say, L., “Help, I’m being held prisoner in a gin factory”? — Ed.*)

ALSO

M. L. Deeever — “Also, you punster, you’ll get Fleur married to Forest D’Leigh just for the name — ugh!” (*Caught again! Just as we were by a relative of Lee DeForrest — Ed.*)

That’s about all there’s room for. Write, if you have nothing better to do. Till next time, when and if . . .



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